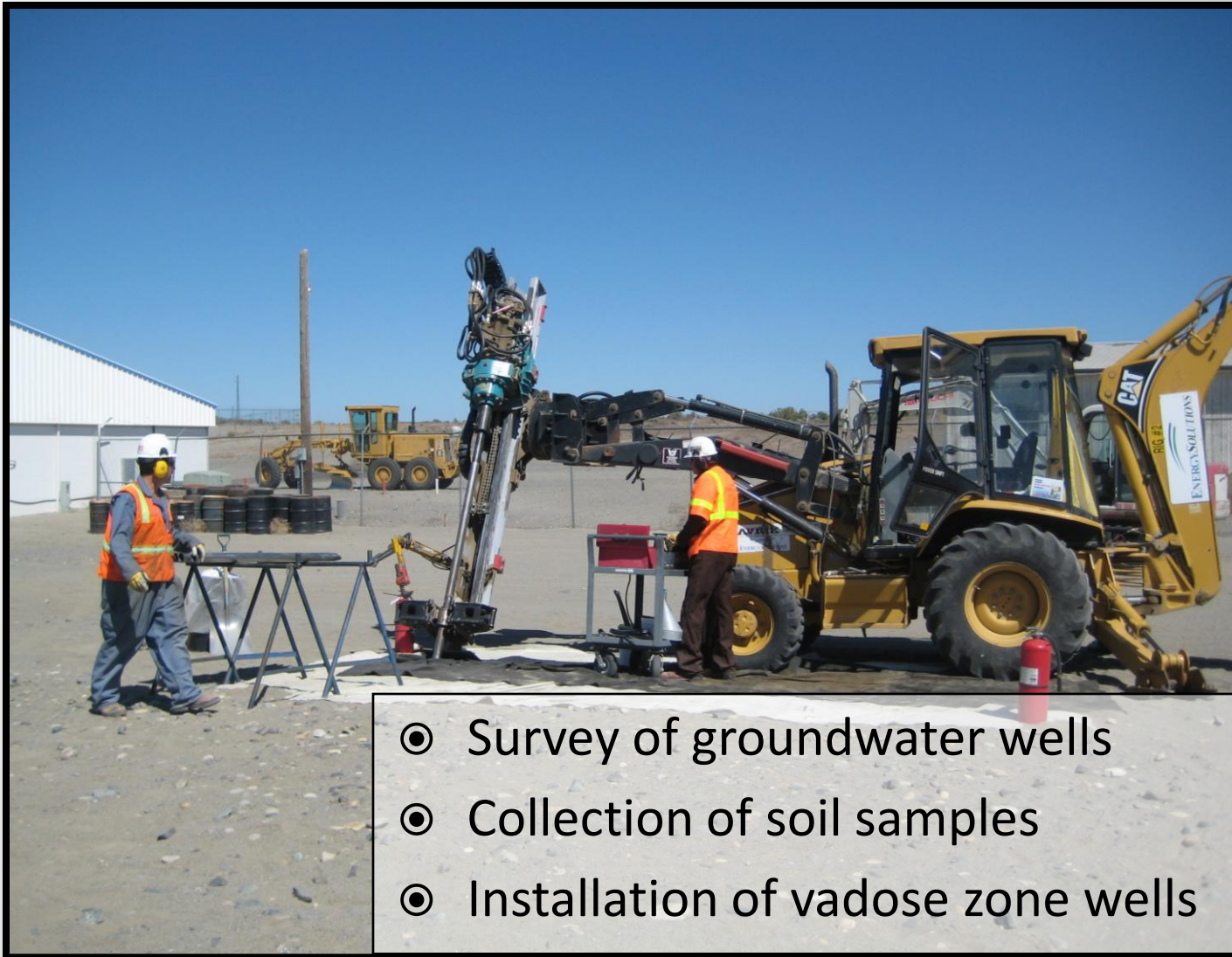


US Ecology Remedial Investigation

**TASK 2: FIELD INVESTIGATION**  
**PRESENTED BY: ROCHELLE HOLM**

# TASK 2: FIELD INVESTIGATION



- ◎ Survey of groundwater wells
- ◎ Collection of soil samples
- ◎ Installation of vadose zone wells

# GROUNDWATER WELL LOCATIONS





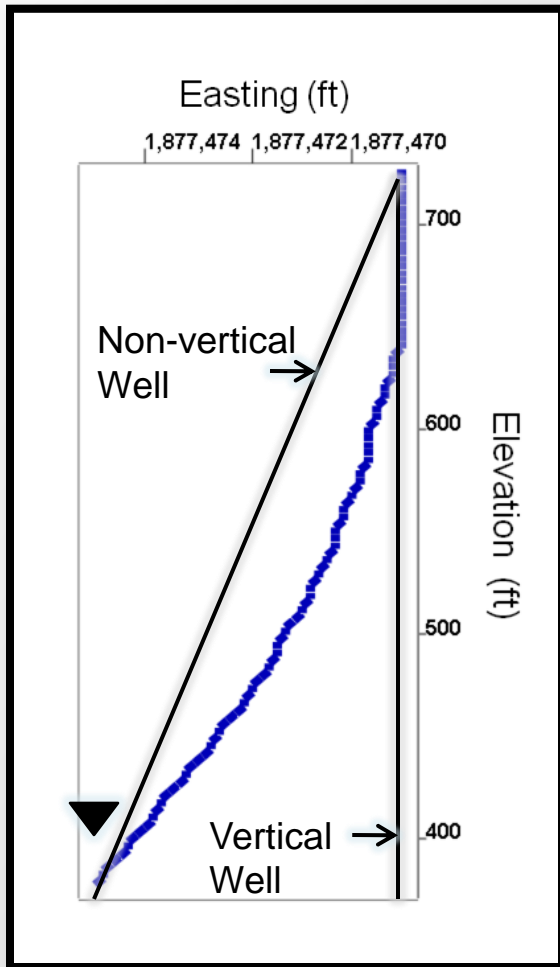
# GROUNDWATER WELL CAMERA SURVEY



- Inspect and document the integrity of the internal well surfaces
- Survey 7 groundwater wells
- Observations
  - 3 wells in good shape
  - 4 wells with bulge, oil or obstructions

# GROUNDWATER WELL SURVEY

MW-8



- Difficulty establishing historical groundwater gradient and flow direction.
- A gyroscopic well deviation survey was performed concurrently with the borehole camera survey.
- Groundwater wells deviated from vertical up to 3.3 inches.

# HYDRAULIC HAMMER RIG (HHR)

- The HHR consists of a EuroDrill®, HD5012 percussion drilling system with a hydraulically powered mast and hammer mounted on a rubber tire backhoe.
- The rotating head operated at a rate of less than 10 revolutions per minute during this study, although capable of rotating up to 68 revolutions per minute.





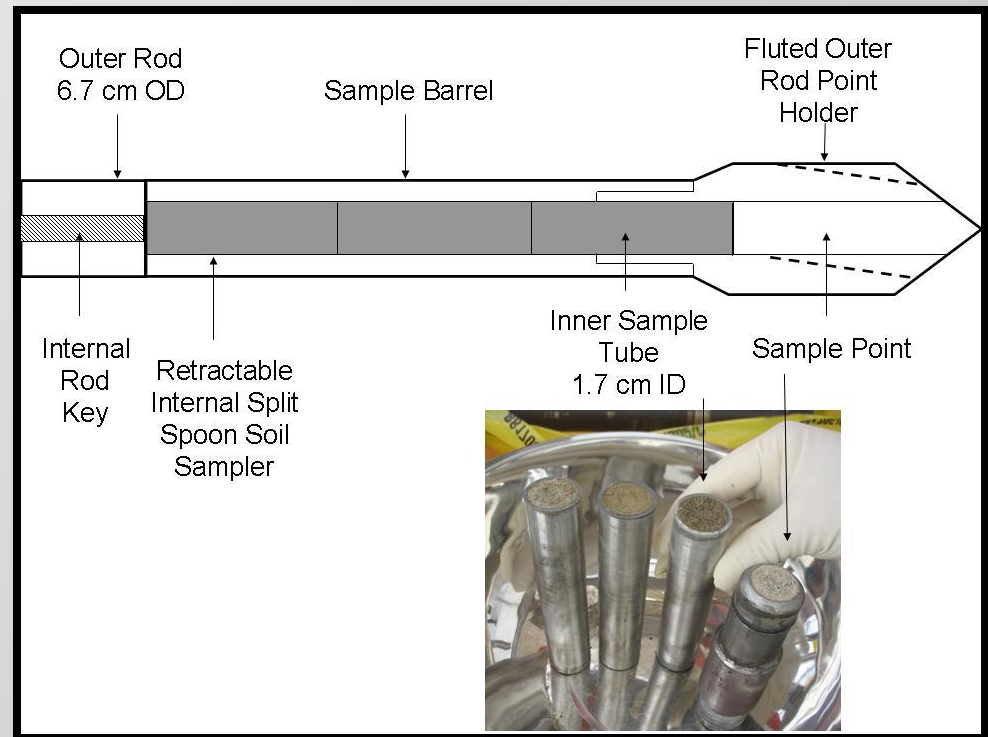
# HYDRAULIC HAMMER RIG (HHR)



- ⦿ Enables the relatively rapid penetration and collection of representative material.
- ⦿ Pushes steel rods, 6.7 cm outside diameter by 1.2 m long.
- ⦿ Utilizes dual rod sampling system

# SOIL SAMPLES

- Depth discrete samples were collected
- 9 Chemical Methods for analysis of VOCs, Anions, Sulfide, Metals, Mercury, SVOCs, PAHs, PCBs, Phenols, and Cyanide in accordance with the SAP
- Physical samples were analyzed for 11 parameters as specified in the SAP





# SOIL SAMPLE LOCATIONS



# LABORATORY ANALYSIS

- ◎ Samples were analyzed at two accredited contract laboratories
  - Chemical samples - Lionville Laboratory, Inc.
  - Physical samples - Shaw Environmental, Inc.



# “RESISTIVE” ZONE

- A zone of consolidated material was frequently encountered during drilling between 65-90 ft bgs.
- Fine grain size and interstitial materials (silt and calcium carbonate) most likely a paleosol





# VADOSE ZONE WELL LOCATIONS



# VADOSE ZONE WELLS

- 30 Wells installed, in bundles of three wells, at variable depths.
- Except for one location, wells were installed upon completion of soil sample collection.



# FIELDWORK CHALLENGES

- Oil was found MW-9A
- 134 samples required in SOW, one sample not collected due to difficult geology (completeness >99%)
- Health and Safety —1 soil sample from the Resin Tank Area had field-measurable levels of radioactivity.
- “Resistive” Geologic Zone
- Inclement Weather
- Initial tooling stress

